

# TYPHOON OLIVE

Early April 1978 saw the near-equatorial trough (NET) slowly shift northward and become more active as the sun made its seasonal progression toward summer solstice. Within the NET, a surface circulation was first analyzed on the 11th at 1200Z near 05N-155E and initially meandered southward then westward at approximately 8 kt (15 km/hr) over the next four days. This circulation eventually developed into the first typhoon of the year, Olive.

Anticyclonic outflow at the 200 mb level was first noted in the vicinity over the surface circulation at 131200Z. Although weak, this outflow persisted for the next two days. By the 16th, satellite imagery and synoptic data indicated increased organization. A formation alert was issued at 160600Z and extended for another 24 hours at 170600Z as aircraft and satellite data confirmed that development was slower than expected. Based on satellite and synoptic data, the first warning on Tropical Depression 02 was issued at 180000Z. A subsequent aircraft fix at 180252Z found a central pressure of 1001 mb and estimated the maximum surface winds to be 30-35 kt (15-18 m/sec).

The mid-tropospheric subtropical ridge was well established at this time with the east-west axis varying between 17-20N. This resulted in the cyclone, once organized, tracking west-northwest at speeds faster than climatology. Satellite data indicated good outflow aloft with continuous intensification resulting. The intensification noted in the 24 hours prior to landfall was in good agreement with climatology. TD-02 was upgraded to Tropical Storm Olive on the 18th at 1800Z. Tropical Storm Olive passed through the Leyte Gulf with maximum sustained winds of 60 kt (31 m/sec).

While crossing the central Philippine Islands, Olive continued her 13 kt (24 km/hr) speed but weakened to 45 kt (23 m/sec) intensity. Upper level outflow remained good during the transit and Olive exited intact into the South China Sea after 201800Z. The combination of good outflow aloft and warm water in the South China Sea caused Olive to reintensify and reach typhoon intensity at 220600Z. The storm recurved through a break in the subtropical ridge along 113E that had been forming since 220000Z. Figure 3-1 shows the three-hourly surface reports from the Paracel Islands (WMO 59981) when Olive passed nearby. A maximum intensity of 85 kt (44 m/sec) was reached 12 hours before recurvature and continued until the 24th at 1200Z.

The recurvature was quite sharp due to strong, deep westerly upper-air flow in the latitudes of 20-30N. Figure 3-2 shows the cirrus outflow to the north and northeast of Olive being affected by the strong westerlies. After recurvature, Olive accelerated out to the east-northeast, staying approximately 180 nm (330 km) south of the maximum wind zone. Gradual weakening occurred after recurvature as cooler, drier air was ingested into the storm with Olive finally becoming extratropical over cooler waters at 1800Z on the 26th of April.

Post-analysis showed that numbered warnings should have begun near 170000Z. Although the system was not fully defined at this time and difficult to pinpoint on satellite data, enough information was available to predict storm force winds were possible within 48 hours. Recurvature was considered probable early in Olive's life and discussed on prognostic reasoning messages. However, the recurvature track was much sharper than initially forecast. More emphasis should have been placed on the depth and strength of the westerlies north of the narrow, subtropical ridge and tracks of previous April cyclones (analogs) should have been studied closely.

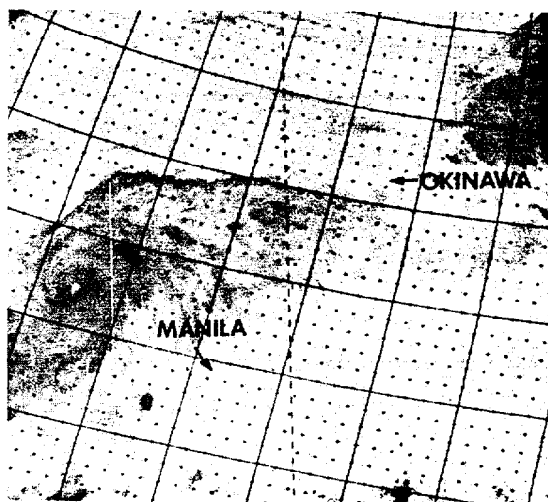


FIGURE 3-2. Infrared imagery of Typhoon Olive at maximum intensity of 85 kt (44 m/sec) during recurvature, 23 April 1978, 1158Z. (NOAA-5 imagery)

FWC/JTWC GUAM										
DATE: 22-23 APRIL 1978	22/18Z	22/21Z	23/00Z	23/03Z	23/06Z	23/09Z	23/12Z	23/15Z	23/18Z	23/21Z
59981										
PARACEL ISLANDS	053	029	029	009	951	896	916	973	002	015

FIGURE 3-1. Three-hourly surface synoptic observations from the Paracel Islands during passage of Typhoon Olive.